de Schweinitz (E. A.)

Culture media for biochemic investigations.

Reprinted from the New York Medical Journal for March 11, 1893.

CULTURE MEDIA FOR BIOCHEMIC INVESTIGATIONS.

By E. A. de SCHWEINITZ, Ph. D.,

BIOCHEMIC LABORATORY, BUREAU OF ANIMAL INDUSTRY, DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

While endeavoring recently to isolate the soluble ferments of the hog-cholera germ,* I have had occasion to make use of an artificial culture medium recommended by Fermi for the study of the ferment-producing germs in general (*Archiv für Hygiene*, 1890, vol. x, Part I, p. 1), containing to every 1,000 c. c. of distilled water 0·2 gramme magnesium sulphate, 1 gramme acid potassium phosphate, 10 grammes ammonium phosphate, and 45 grammes glycerin. In this solution the hog-cholera germ grows well and characteristically.

The idea was suggested by my assistant, Mr. Emery, that this liquid might be conveniently substituted for beef broth in the preparation of agar or solid nutrient media. We accordingly had some made, by adding to the above solution one per cent. of agar, heating and filtering in the usual way. In this manner a clear, almost colorless transparent medium was obtained, upon which the hog-cholera and swine-plague germs grow characteristically. It would probably be equally well adapted for many other germs.

As the convenience of substituting this solution of salts for beef broth was at once apparent, I have tried its adaptability for the cultivation of the bacillus of tuberculosis and bacillus of glanders, and have had in use in my laboratory for some time media prepared as follows:

For tuberculosis, the above-mentioned solution of salts containing seven per cent. of glycerin and one per cent. of peptone, and for solid media this latter liquid without peptone plus one per cent. agar. Upon these media the growth of the germ is both rapid and characteristic—more rapid than upon an agar prepared from beef broth.

For the cultivation of the glanders bacillus, the medium was prepared exactly in the same way as that for tuberculosis, except that only five per cent. glycerin was used instead of seven, the solution was allowed to remain slightly acid instead of being neutralized, and no peptone was added. The glanders bacillus multiplies both satisfactorily and rapidly.

The solution of salts used for these media when first prepared is alkaline in reaction; by simply boiling, however, it can be rendered either neutral or acid, as in boiling some ammonia will be given off.

This method of preparing culture media, especially for biochemic work, where the products of the growth of the germ are the main points to be considered, has several advantages over the use of beef broth. It is always an easy matter to obtain the chemically pure salts, and, as the amount and character of the salts entering into the solution are known, it is less difficult to obtain and study the products which are actually the result of the growth of the germ. If the expense is to be considered, the medium prepared in this way is very much cheaper.

I think this particular medium, and media of this class, will prove especially valuable in the study of bacterial products.

I hope to be able to report shortly upon the value and composition of a mallein and tuberculin derived from these artificial liquids.

* Philadelphia *Medical News*, October 1, 1892.